PRECISE ELECTROPHYSIOLOGICAL CONNECTIVITY WITH THE VIRTUAL BIGBRAIN

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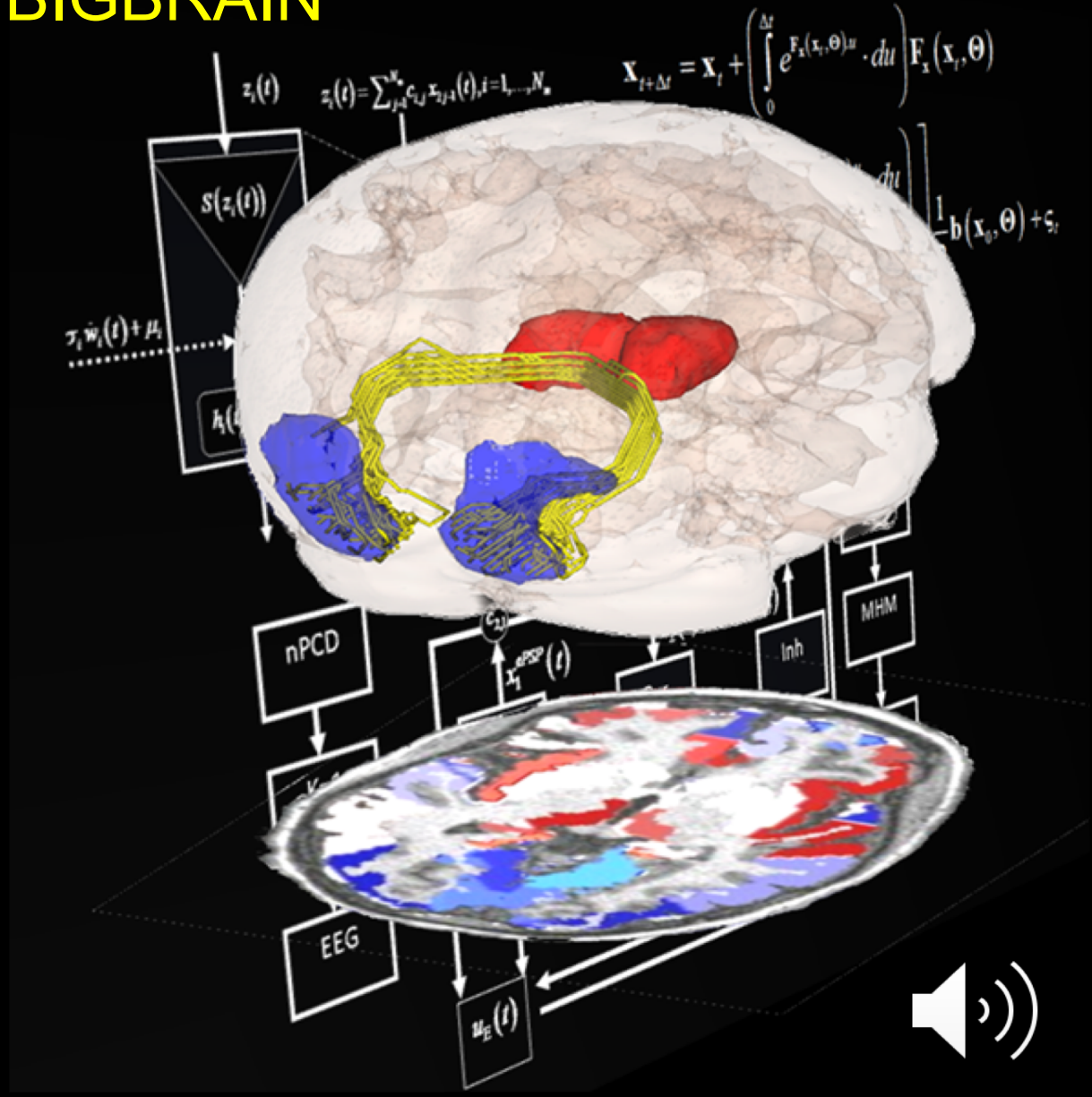


The CCC Multimodal Neuroinformatic Platform

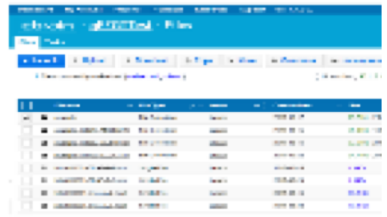
CNEURO

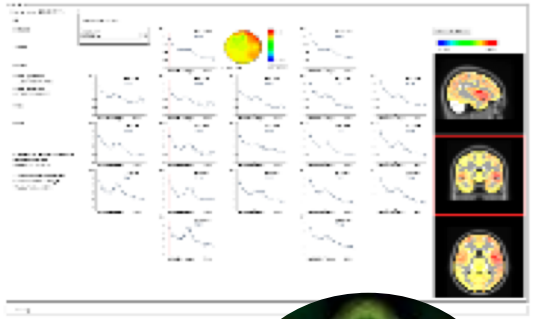
CNEURO
CENTRO DE NEUROCIENCIAS DE CUBA

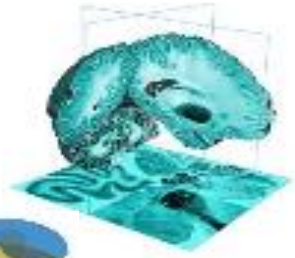
UESTC 1956

Neuro-informatics

- qEEGt
- Biomarkers
- Head Models
- BC-VARETA
- Multi modal Neuroimag







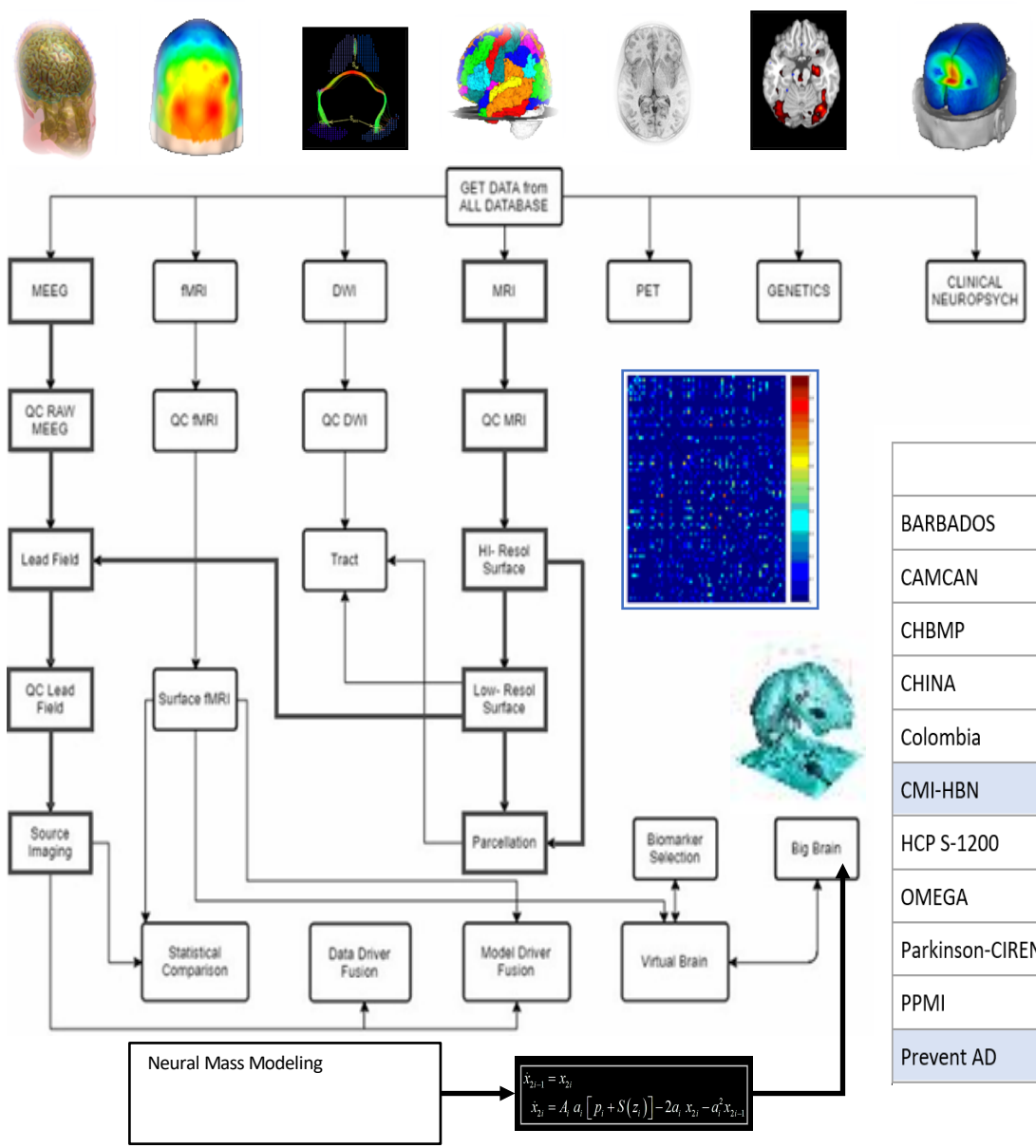
neuro

- HCP
- CAM-CAN
- Cuba HBMP
- CMI

BIDS

Multimodality Automatic Pipeline
Supported by CBRAIN and WeBrain

The Multimodal Neuroinformatics Platform Architecture



Computing Clusters (12 Nodes)

Per Node	TOTAL
24 Cores	288 cores
120 G FLOPS	1.44T FLOPS
128 GB RAM	1536 GB RAM

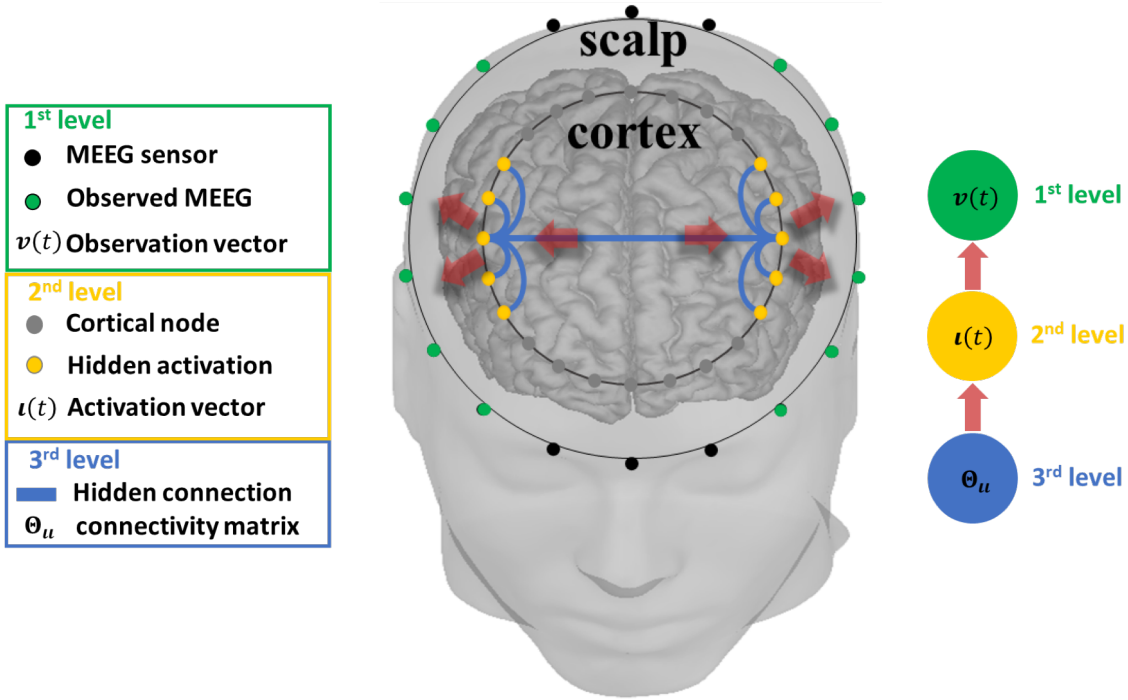
STORAGE: 360TB NETWORK

Databases and Computing Facilities

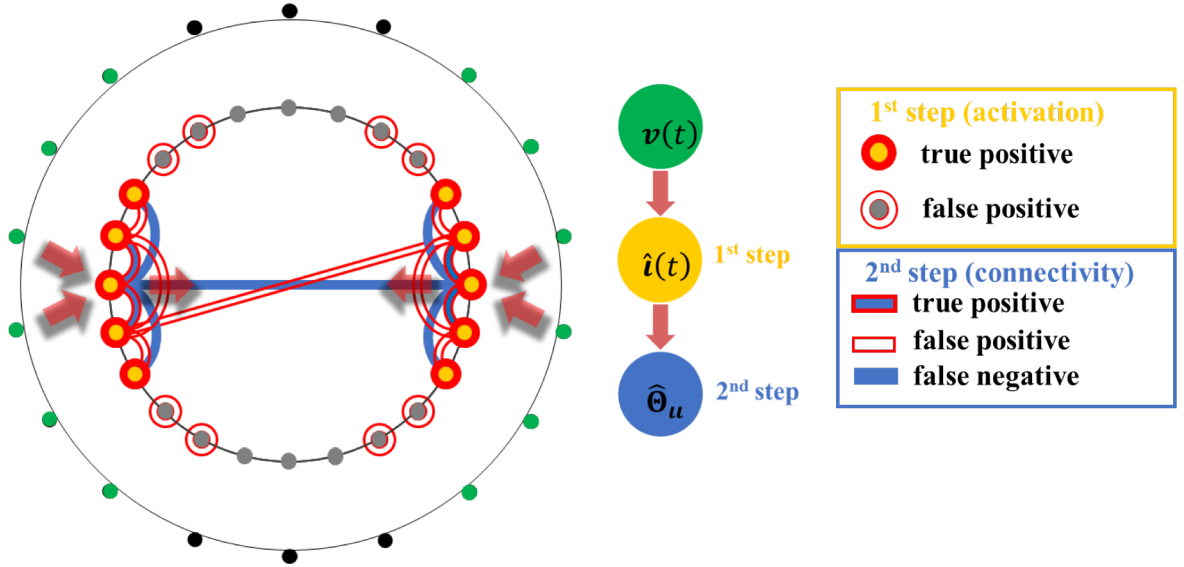
	Group	MRI	fMRI	EEG	MEG	DWI	ECoG	ASL	PET/SPECT	Behavior
BARBADOS	Malnutrition, Healthy			108						108
CAMCAN	Healthy	655	650		647	627				708
CHBMP	Healthy	202		86		201				86
CHINA	Healthy			113						113
Colombia	Alzheimer			45						45
CMI-HBN	Healthy Children	1306	1306	1306		1306				1306
HCP S-1200	Healthy	1113	889		95	889				1206
OMEGA	Healthy, patients ADHD, chronic pain	184			184					184
Parkinson-CIREN	Parkinson	24	24	25						25
PPMI	Parkinson, Healthy	1198	338			1291			72	2279
Prevent AD	Healthy over 55 years old	232	232			229		232		

Leakage in source activation and source connectivity

Ontological levels of MEG/EEG connectivity models



Two-step connectivity estimation



Leakage in source activation and source connectivity

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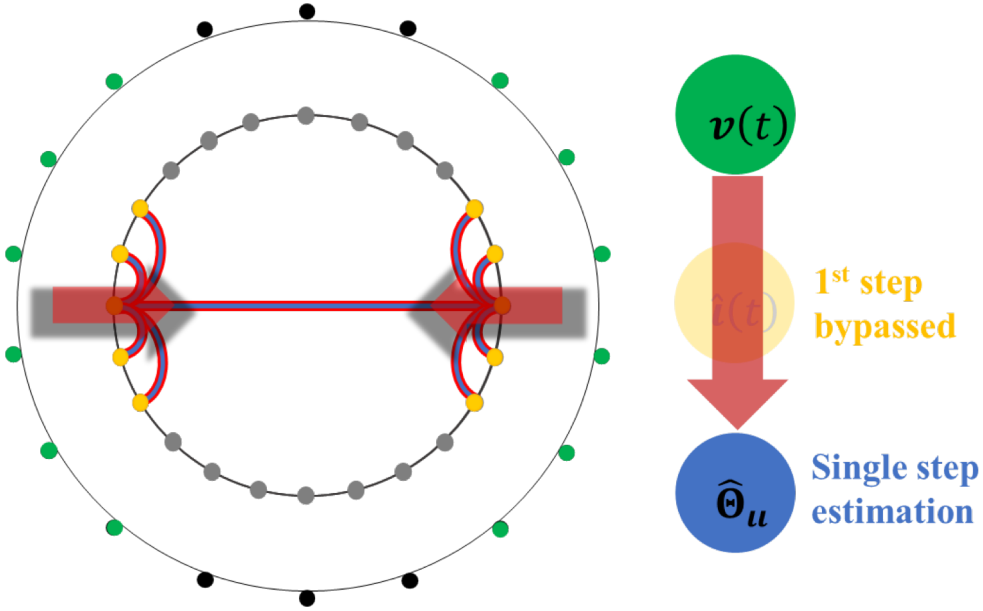
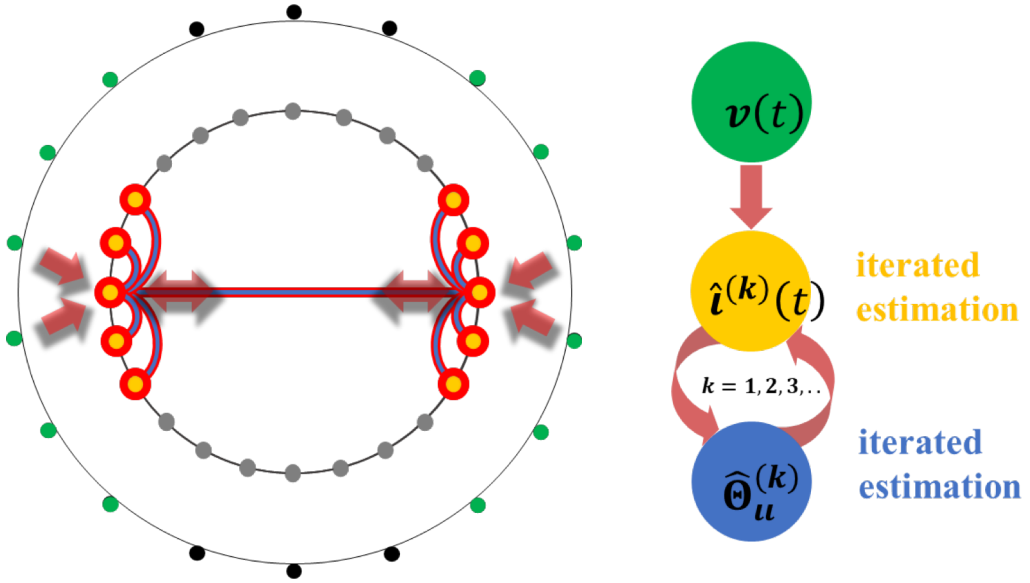
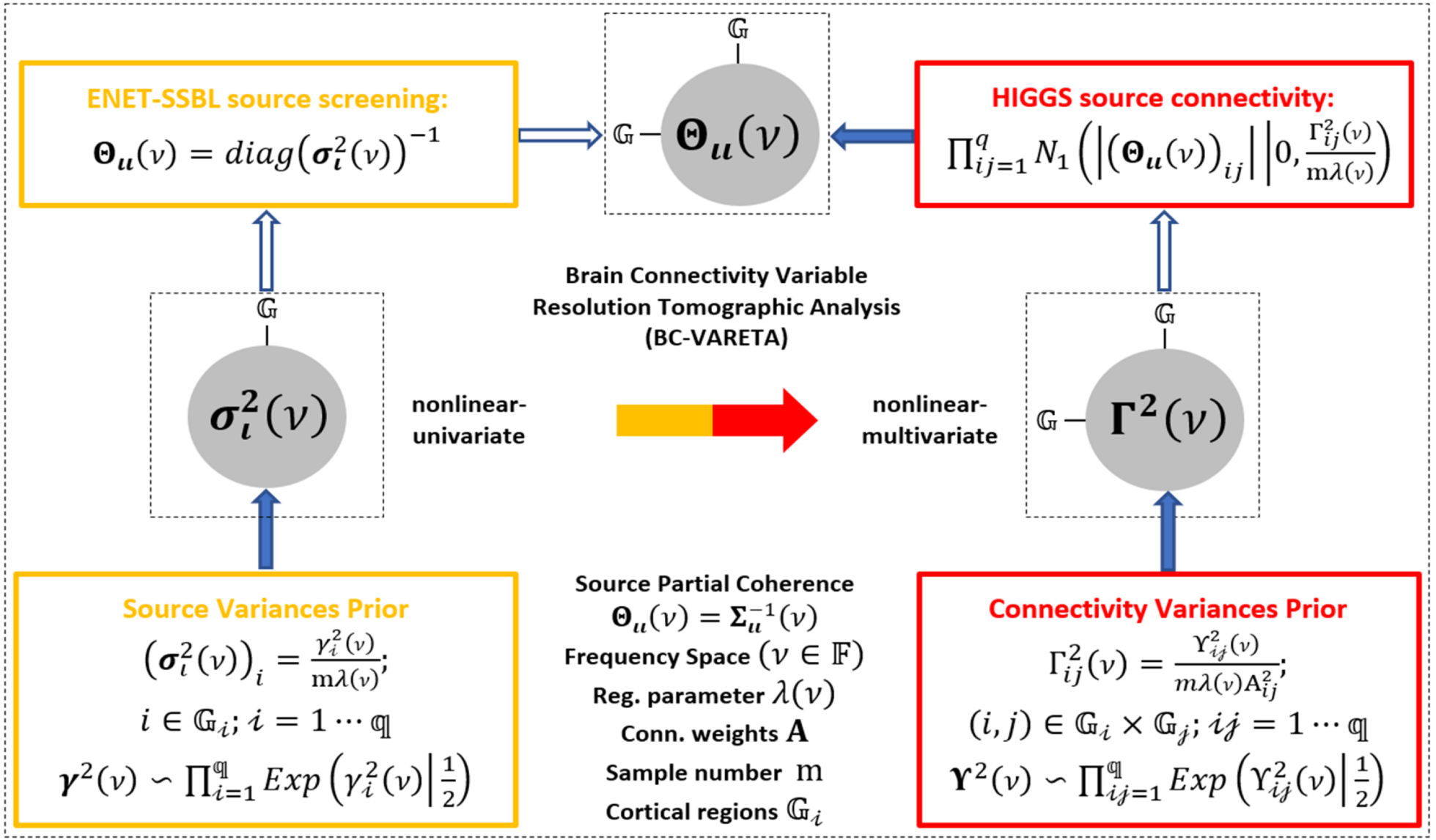


Iterated connectivity estimation



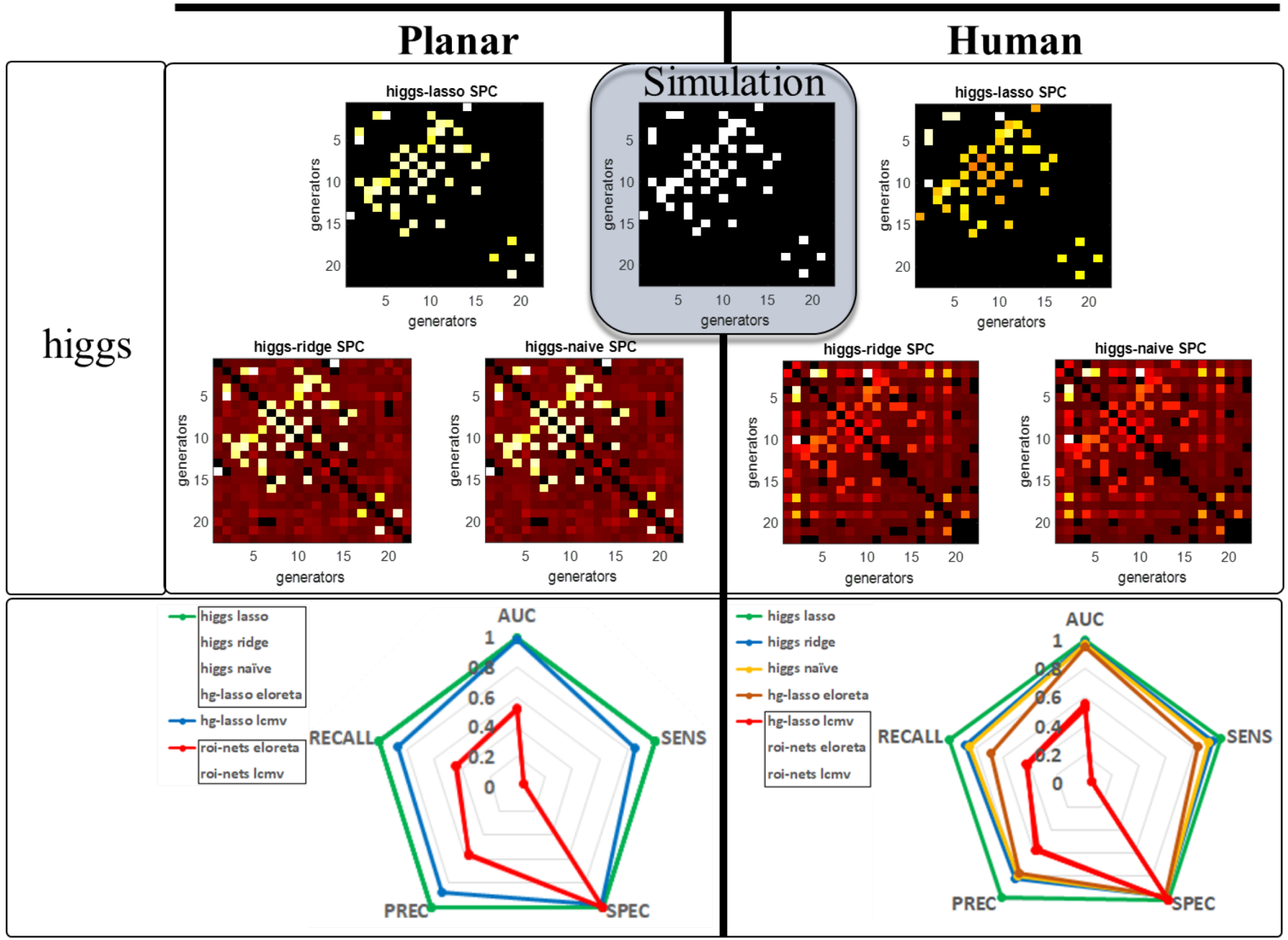
BC-VARETA toolbox: Extracts MEEG spectral activations and sparse Hermitian graphical model.



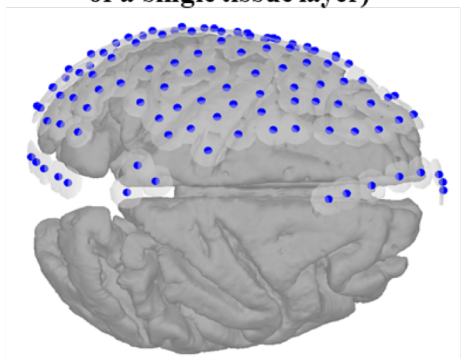
Deirel Paz Linares

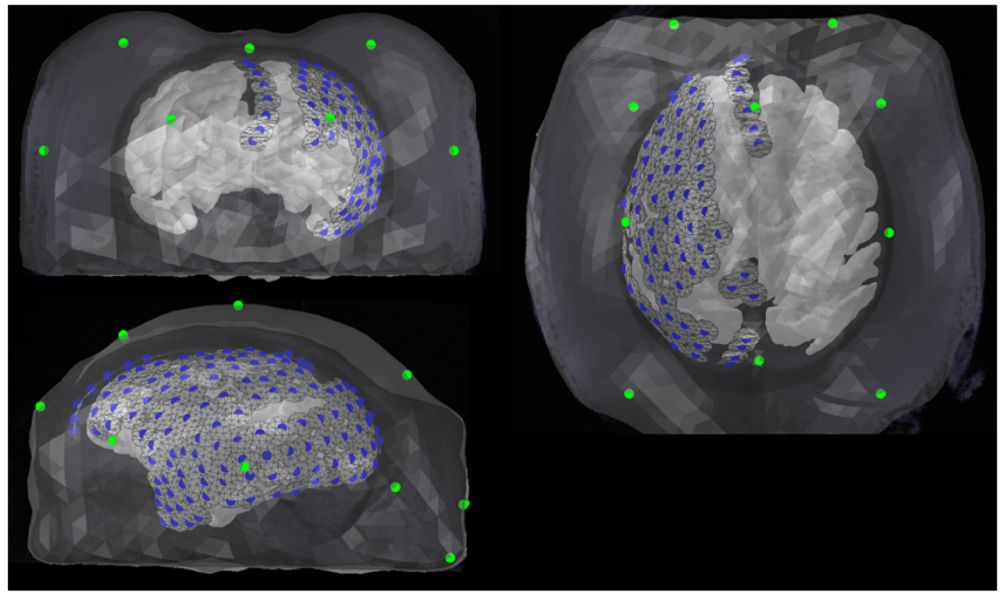
Ariosky Areces Gonzalez

Rigel Wang

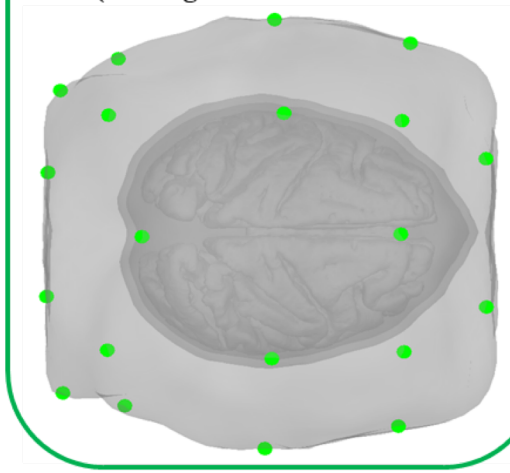

Planar
Human
Simulation
higgs
higgs-lasso SPC
higgs-ridge SPC
higgs-naive SPC
generators
higgs lasso
higgs ridge
higgs naïve
hg-lasso eloreta
hg-lasso lcmv
roi-nets eloreta
roi-nets lcmv
AUC
SENS
SPEC
PREC
RECALL

ECoG CONDUCTANCE MODEL (homogeneous conductance of a single tissue layer)





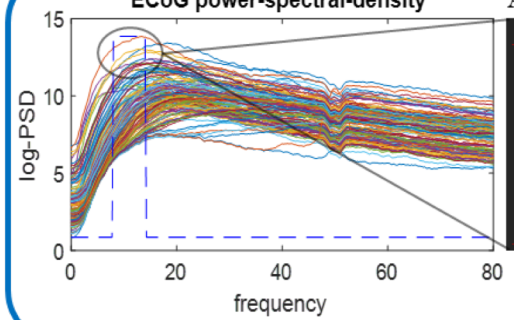
EEG CONDUCTANCE MODEL (heterogeneous conductance



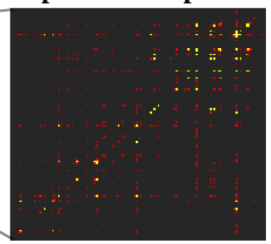
Spectral ECoG data

Spectral EEG data

ECoG power-spectral-density

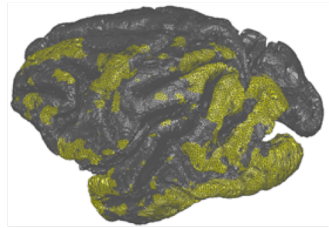


Alpha cross-spectra

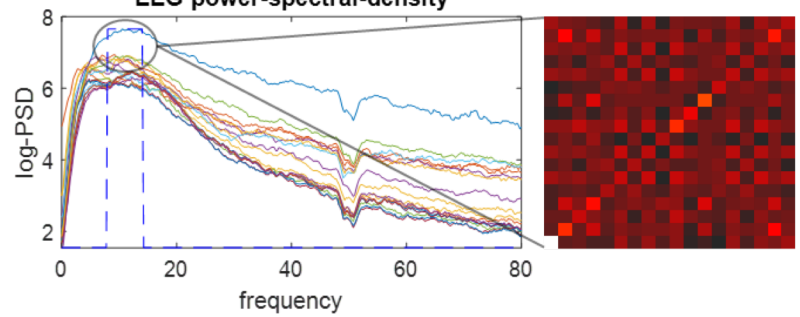


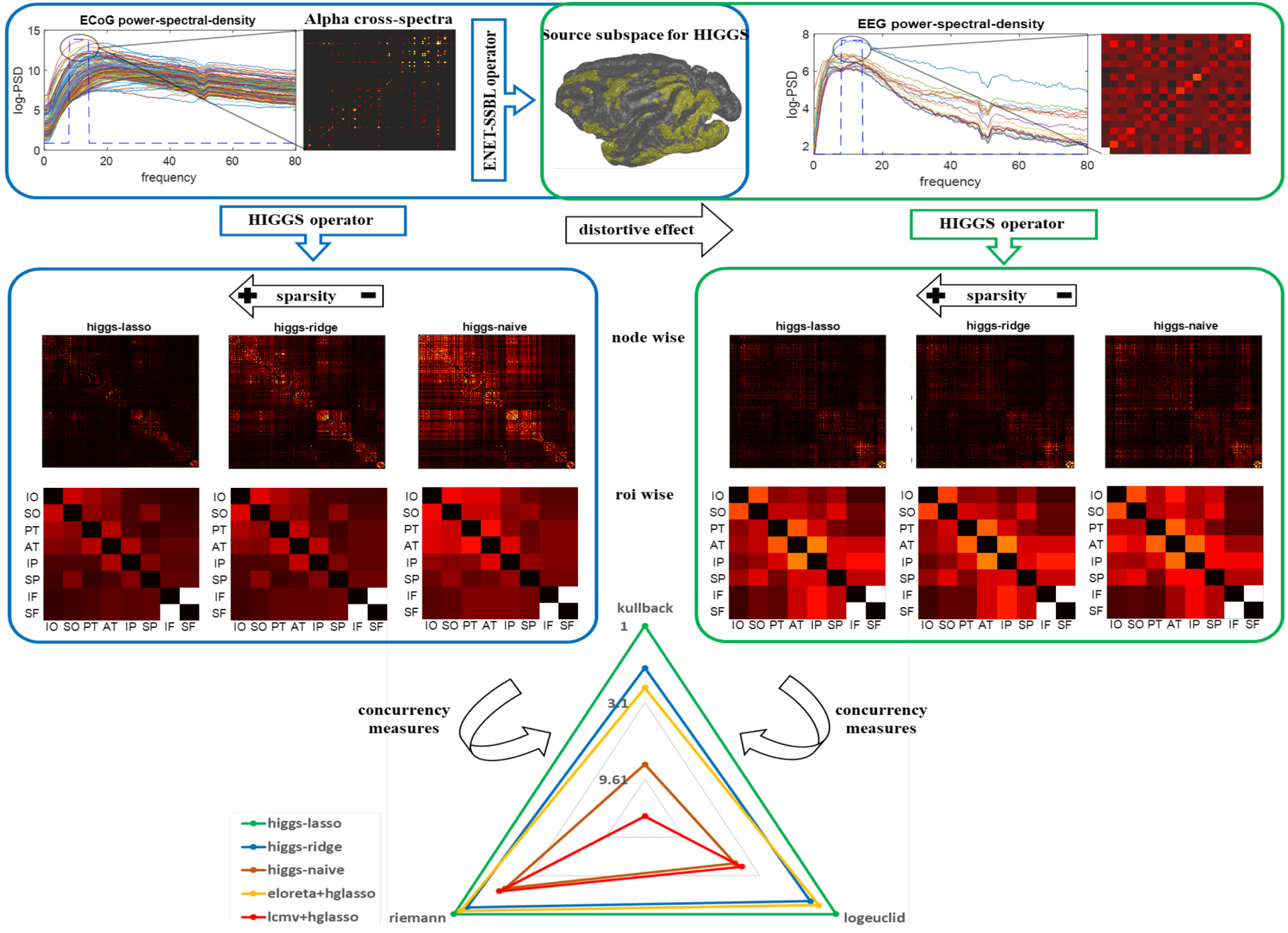
ENET-SSBL operator

Source subspace for HIGGS



EEG power-spectral-density




ECoG power-spectral-density
Alpha cross-spectra
log-PSD
frequency
ENET-SSBL operator
Source subspace for HIGGS
EEG power-spectral-density
HIGGS operator
distortive effect
HIGGS operator
sparsity
sparsity
higgs-lasso
higgs-ridge
higgs-naive
node wise
roi wise
IO SO PT AT IP SP IF SF
concurrency measures
concurrency measures
kullback
riemann
logeuclid
3.1
9.61
higgs-lasso
higgs-ridge
higgs-naive
eloreta+hglasso
lcmv+hglasso